U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E00058NE	TCDS NUMBER E00058NE REVISION: ORIGINAL* DATE: December 15, 1998 BOMBARDIER-ROTAX GMBH MOTORENFABRIK MODELS: ROTAX 914 F2 914 F3 914 F4

Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number E00058NE) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations, provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

TYPE CERTIFICATE (TC) HOLDER Bombardier- Rotax GmbH
A-4623 Gunskirchen, Austria

I. MODELS	**914 F2**	**914 F3**	**914 F4**
TYPE	For models 914 F2 and 914 F4: Four cylinders, horizontally opposed, four stroke engine with turbosupercharger and electronic turbocharger control unit, reduction gear driven, liquid cooled cylinder heads, ram air cooled cylinders, dry sump pressure lubrication, vacuum pump, optional. For Model 914 F3: Instead of the optional vacuum pump, a hydraulic constant speed propeller control is mounted.		
RATINGS			
Takeoff power (5 min.) : (sea level pressure altitude) (see notes 12 & 13.)	84.5 kW/115 HP at 5,800 rpm	- -	- -
Max. continuous power : (sea level pressure altitude)	73.5 kW/100 HP at 5,500 rpm	- -	- -
OIL pressure:	Normal operating range 2.0 - 5 bar (29 to 73 psi), with maximum coldstart value of 7 bar (102 psi), and minimum value of 1.5 bar (22 psi) - (see Note 2.).		
Max. oil-inlet temperature (° C):	130	- -	- -
Max. cylinder-head temperature (° C) :	135	- -	- -
COOLANT temperature:	Monitored via cylinder head temperature		
specification:	See Note 7 for a reference to coolant specifications (ref. Operator's Manual).		
FUEL pressure: (see note 2) (at inlet to carburetor)	Minimum: airbox pressure plus 0.15 bar (2.1 psi) Maximum: airbox pressure plus 0.35 bar (5.0 psi) Normal: airbox pressure plus 0.25 bar (3.6 psi)		
OIL, Lubrication:	Maximum capacity: 3.0 L (3.17 qts) See Note 7 for a reference to oil specifications (reference Operator's Manual).		

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LEGEND: "- -" INDICATES "SAME AS PRECEDING MODEL"
"---" INDICATES "DOES NOT APPLY"
NOTICE: ALL PAGES ARE REFORMATTED. SIGNIFICANT CHANGES, IF ANY ARE BLACK-LINED IN THE LEFT MARGIN.

I. MODELS (Continued)	914 F2	914 F3	914 F4
CARBURETOR	2 x Bing constant pressure carburetors, type 64/32, main nozzle 160, cylinders 1 & 3 164, cylinders 2 & 4		
FUEL PUMP	2 x Electrical Pierburg fuel pumps - Rotax P/N 996 735		
IGNITION SYSTEM	Rotax dual magneto high-voltage condenser ignition, contactless SMD type.		
Ignition timing	26° BTDC for **circuit A**, and 22° BTDC for **circuit B**.		
SPARK PLUGS	ND X27EPR-U9, Rotax part number 897257		
ALTERNATOR, external	Nippondenso F3A with integrated regulator. P/N 887251 (OPTIONAL - see Note 8)		
GENERATOR, integrated	Ducati, permanent magnet single phase generator with external rectifier regulator.		
STARTER	Nippondenso ferrite type 12V / 0.6 kW, engagement via reduction gear and freewheel.		
VACUUM PUMP	Airborne 211 CCW, including drive. (OPTIONAL) - see Note 9.		
ENGINE SPEED MEASUREMENT (rpm)	Electronic tachometer connector and optional mechanical tachometer drive		
WEIGHT (dry) (see Note 4.)	74.7 kg (164.7 lbs)	77.4 kg (170.6 lbs)	74.7 kg (164.7 lbs)
DISPLACEMENT	1211 cm^3 (73.9 in^3)	- -	- -
BORE	79.5 mm (3.13 in.)	- -	- -
STROKE	61 mm (2.40 in.)	- -	- -
COMPRESSION RATIO	9.0 **:** 1	- -	- -
PROPELLER ROTATION	CCW	- -	- -
PROPELLER FLANGE	P.C.D. 75 mm, 80 mm, and 4 inch diameter for fixed propeller	P.C.D. 75 mm, 80 mm, and 4 inch diameter with drive for hydraulic gov. for constant speed propeller	P.C.D. 75 mm, 80 mm, 4 inch diameter prepared for hydraulic gov. for constant speed propeller
GEAR REDUCTION RATIO (crankshaft to prop)	2.4286 **:** 1	- -	- -
PROPELLER CONTROL	---	adapter and drive for hydraulic constant speed propeller	---
GOVERNOR (see Note 10.)	---	Woodward 210 786, (Rotax P/N 886735) or McCauley type DFCU 290D17B/T2 (Rotax P/N 888507).	---
OPERATING INSTRUCTIONS	For models 914 F2, F3 and F4: Operator's Manual for Rotax engine type 914 F, latest revision (see Note 7. of this Data Sheet).		

CERTIFICATION BASIS

14-CFR, part 33, Airworthiness Standards: Aircraft Engines, effective February 1, 1965, as amended by 33-1 through 33-15, inclusive, including Federal Aviation Administration Special Condition, NPRM Doc. 24922, Notice 92-14.

MODEL	DATE OF APPLICATION	DATE TC ISSUED OR REVISED
914 F2	February 16, 1994	December 4, 1998
914 F3	February 16, 1994	December 4, 1998
914 F4	February 16, 1994	December 4, 1998

IMPORT REQUIREMENTS

To be considered for installation on United Sates registered aircraft, each engine (or propeller) to be exported to the United States shall be accompanied by a certification of airworthiness for export, or certifying statement endorsed by the exporting cognizant civil airworthiness authority, which contains the following language:

(1) This engine (or propeller) conforms to its United Sates type design (Type Certification Number E00058NE) and is in a condition for safe operation.

(2) This engine (or propeller) has been subjected by the manufacturer to a final operational check and is in a proper state of airworthiness.

Reference 14-CFR, part 21.500, which provides for the airworthiness acceptance of aircraft engines or propellers manufactured outside of the United States for which a United States type certificate has been issued.

Additional guidance is contained in FAA Advisory Circular 21-23, Airworthiness Certification of Civil Aircraft, Engines, Propellers, and Related Products, Imported into the United States.

Service Bulletins, structural repair manuals, vendor manuals, aircraft flight manuals, and overhaul and maintenance manuals, which contain a statement that the document is Austro Control GmbH approved, are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

NOTES

NOTE 1. Temperature Limits (maximum permissible):

Cylinder head: 135°C
Oil inlet: 130°C

NOTE 2. Pressure Limits:

Fuel Pressure at inlet to Carburetor: 0.15 bar (2.2 psi) - minimum
0.35 bar (5.0 psi) - maximum

The fuel pressure must not exceed 0.35 bar (5.0 psi) to ensure not to override the float valve in the carburetor.

Oil Pressure:

Normal operation: 2.0 bar - 5.0 bar (29 - 73 psi) above 3500 RPM
Idling: 0.8 bar (11.6 psi) - minimum at high oil temperature
Starting & warm-up: 7 bar 102 psi) - maximum

NOTE 3. Accessory Drive Mounting Provisions:

Accessory	914 F2	914 F3	914 F4	Rotation, facing drive pad	Speed Ratio, to crankshaft	Maximum Torque	Overhung moment (max.)
Starter	*	*	*	CW	25.25 : 1	0.5 Nm	---
Alternator	**	**	**	CCW	1.24 : 1	1.6 Nm	---
Vacuum pump	**	---	**	CCW	0.54 : 1	0.9 Nm	0.4 Nm
Governor	---	*	---	CCW	0.54 : 1	1.8 Nm	1.04 Nm
Tachometer	**	**	**	CW	0.25 : 1	---	---
Water pump	*	*	*	CCW	0.87 : 1	0.5 Nm	
Oil pump	*	*	*	CCW	0.50 : 1	0.7 Nm	---

"---" Indicates "does not apply"
"*" Standard feature
"**" Optional feature
"CW" Clockwise
"CCW" Counter clockwise

NOTE 4. Engine weight is defined as the following configurations:

914F2/914F4: 74.7 kg (164.7 lbs), with ignition unit and generator, carburetor, oil tank and electric starter, engine mount, turbosupercharger and turbocharger control unit, muffler, fuel pumps and alternator, but without the radiator.

914F3: 77.4 kg (170.6 lbs), with propeller flange P.C.D. 75/80 mm / 4", drive and adapter for hydraulic governor for constant speed propeller, governor and alternator.

Alternator (external): 3.0 kg (6.61 lbs).

Center of Gravity (CG): Reference the 914F Installation Manual, latest revision (see NOTE 7).

NOTE 5. Fuel Specifications (see Operator's Manual as defined in NOTE 7):

- 100LL AVGAS in accordance with American Society for Testing & Materials (ASTM) D910.
- Automotive gasoline, unleaded regular, minimum RON 95, in accordance with ASTM D4814.

NOTE 6. Model Description:

F2 Basic model; 4-stroke, 4 cylinder horizontally opposed, turbosupercharger and electronic turbosupercharger control unit, one central camshaft, push-rods, overhead valves, liquid cooled cylinder heads, ram air-cooled cylinders, dry sump forced lubrication, dual breakerless capacitive discharge ignition, two constant depression carburetors, two electrical fuel pumps, fixed pitch propeller configuration, drive output via reduction gear with integrated shock absorber and overload protection, electric starter, integrated DC generator, steel exhaust system, vacuum pump drive (optional), and external alternator (optional).

F3 Same as F2, except; additional drive and adapter for hydraulic governor propeller shaft for constant speed propeller with governor installed.

F4 Same as F3, except; fixed pitch propeller, prepared for installation of hydraulic governor for constant speed propeller (without drive, adapter and governor).

NOTE 7. Operating and Service Instructions:

- Operator's Manual for Rotax 914F Aircraft Engine - Part Number 897 810
- Installation Manual for Rotax 914F Aircraft Engine - Part Number 897 816
- Maintenance Manual for Rotax 914F Aircraft Engine - Part Number 897 812

NOTE 8. Generator and Alternator Operation:
The optional external alternator was certified with the engine under 14-CFR, part 33, using some of the standards specified in Aerospace Standard AS 8020. Compliance to the AS 8020 standard for parallel operation of the optional external alternator and integrated internal generator has been demonstrated.

NOTE 9. Vacuum Pump:
During 14-CFR, part 33 certification of the 914 F series engine, compliance for the vacuum pump has only been shown to the attachment requirements of 14-CFR, part 33.25.

NOTE 10. Governor:
During 14-CFR, part 33 certification of the 914 F series engine, compliance for the Woodward hydraulic governor has been shown to the attachment requirements of 14-CFR, part 33.25, and in lieu of 14-CFR, part 35.42 (as required by part 33.19(b)), JAR-E (b)(1)(ii) was used for governor functional testing.

NOTE 11. Engine Attitude:

The 914 F2/F3/F4 model engines have been certified up to a maximum 40 degree bank angle, with no loss of lubrication capability of the dry sump system. See Rotax 914 F Operator's Manual, section 7, titled, Operating Instructions.

NOTE 12. Critical Altitude:

Five minute takeoff power is limited to a critical altitude of 8000 feet (2450 meters).

NOTE 13. Takeoff Power:

Five minute takeoff rated horsepower is 84.5 kW/115 HP when the single channel digital turbocharger control unit (TCU) is operable. Available takeoff power is limited to 66.1 kW/90 HP if the TCU fails prior to or during takeoff roll, unless the waste gate lockout switch is engaged and manifold pressure is assured just prior to takeoff roll. Therefore, aircraft installation that require more than 66.1 kW/90 HP for safe takeoff must have procedures requiring waste gate lockout engagement prior to every takeoff.

NOTE 14. Overhaul:

The Rotax 914F series engine must be overhauled in accordance with the approved overhaul manual or returned to the manufacturer for overhaul.

NOTE 15. Engine Certification:

Type Certificate E00058NE applies to Rotax 914 F2, 914 F3 and 914 F4 engines which are in compliance with the following Bombardier-Rotax mandatory Technical Bulletins: Technical Bulletin Numbers 914-03, 914-04, 914-05, 914-07, 914-08, 914-12 and 914-13. Engines with serial numbers 4.420.200 and higher incorporated these Technical Bulletins at the time they were manufactured by Bombardier-Rotax.

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